University of Massachusetts Occasional Papers in Linguistics

Volume 26 *University of Massachusetts Occasional Papers in Linguistics -- Vol 23: Issues in Semantics*

Article 13

2000

Phrasal Quantifier Float

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Although quantifier float has been the focus of substantial inquiry, the chief object of study is usually the 'external' syntax of floated quantifiers: their phrase structural position and their relation to other constituents. Standard accounts of this phenomenon consequently take quite for granted that floated quantifiers have little visible internal structure. Yet examining this internal syntax more closely reveals that in fact, floated quantifiers have more potentially visible structure than often assumed. These observations cast quantifier float more generally in a somewhat different light.

The central thesis of this paper is that all floated quantifiers are in fact full, traceless QPs. Evidence for this is adduced both from previously noted cases of phrasal quantifier float, and from novel evidence involving epithets and idioms. Section I reviews standard treatments of quantifier float and introduces the troubling phrasal float facts. Section II considers the consequences for phrase structure of supposing that all floated quantifiers are phrasal, formulating both an adjunction analysis and a copy-theoretic alternative and settling on the former. Section III develops an account of the relationship between floated quantifiers and their A-position associates rooted in interpretive

I've benefited from discussions with Kyle Johnson, Peggy Speas, Lyn Frazier, Sandy Chung, Nancy Hall, Angelika Kratzer, and Meredith Landman.

This paper was written as a syntax generals paper, and therefore necessarily resists the temptation to venture into the interesting and difficult semantic questions associated with quantifier float. Even so, the syntactic argument made here has various ramifications for the interpretation of floated quantifiers, some of which will be mentioned fleetingly. One especially intriguing question set aside for another time is how the phrasal float facts might be reconciled with an analysis of the semantics of float such as Brisson (1998), which crucially assumes that floated quantifiers are adverbs.

UMOP 23: Issues in Semantics, Kiyomi Kusumoto and Elisabeth Villalta, (eds.),251-284.

considers more general consequences of this analysis, building a theory of the inventory of floated quantifiers around the idea that *only* full QPs may float.

Although this is primarily an exploration of the syntax of floating quantifiers rather than their semantics, the syntactic assumptions proposed here raise several semantic questions distinct from those raised by standard treatments of quantifier float.

1. The Problem

1.1. Two Standard Approaches

An essential observation associated with quantifier float is the relationship reflected in (1-2):

(1) a. All the candidates have expressed indignation.
b. Both the chiropractors may love lawn bowling.
(2) a. The candidates have all expressed indignation.
b. The chiropractors may both love lawn bowling.

Since the classical TG treatment of floated quantifiers as right-displaced determiners, two general classes of accounts have been proposed.

One, the quantifier stranding account (Sportiche 1988, Shlonsky 1991, others), treats floated quantifiers as the stranded residue of a displaced subject. On this view, a subject containing a quantifier eligible for floating may move in either of two ways. It may move in its entirety, taking the quantifier along with it to its surface position. This yields the sort of structure exemplified in (1), with the parse in (3):

(3) $[_{QP}$ all $[_{DP}$ the candidates$]]_i$ have t_i expressed indignation.[1]

Alternatively, the DP embedded inside the subject may move alone, leaving the quantifier stranded in a lower subject position. This yields the sort of structure exemplified in (2), with the parse in (4):

(4) $[_{DP}$ the candidates$]_j$ have $[_{QP}$ all $t_j]$ expressed indignation.

This view thus preserves the transformational relationship between floated and non-floated quantifiers, deriving both sorts of structures from an identical source.

[1] While the categories Q and QP are frequently invoked, their relationship to D and DP is not customarily made explicit. Here they are intended only as a means of distinguishing, for purely expository reasons, a particular set of Ds and the projections these Ds head, respectively; neither Q nor QP should be accorded any independent theoretical status.

The other sort of account (Dowty and Brodie 1984, Doetjes 1992) assimilates floated quantifiers to adverbs rather than to their non-floated counterparts. Thus floated quantifiers are treated as simply a particular kind of left-adjoining adverb which happens to bear an indirect semantic relationship to certain determiners. Such accounts, then, would not require sentences such as (1) to have any particular parse. The structure in (3) is compatible with this sort of account, as are for that matter variants of this parse not assuming movement of the subject. Sentences such as (2), though, would receive a structure as in (5):

(5) [$_{DP}$ the candidates] have [$_{AdvP}$ all] expressed indignation.

This parallels (6):

(6) The candidates have {merely / simply / just} expressed indignation.

Such adverbial analyses, then, reflect the resemblance between (2) and (6), but must make additional stipulations about lexical relationships to reflect the resemblance between (1) and (2). The stranding analyses, of course, do the opposite: they establish a clear and profound connection between (1) and (2), but treat (2) and (6) as utterly unrelated. Representing this schematically:

(7)

	Resemblance between floated and non-floated Qs	*Resemblance between floated Qs and adverbs*
Adverbial accounts	• Must make additional stipulations	• Captured
Stranding accounts	• Captured	• The two are treated as utterly unrelated

The two approaches, then, attempt to meet different analytical goals.

Both lines of thought present a range of problems, both empirical and theoretical, independently worthy of discussion. Only some of these will arise here, but for the moment, one particular empirical problem is of special interest.

1.2. The Phrasal Float Data[2]

Common to both of these sorts of approaches, however formulated in their specifics, are difficulties presented by float of phrasal material.

Although the canonical cases of quantifier float involve heads, more complicated structures can float as well. In English, for example, a numeral may float along with the quantifier:

[2] Several of the observations made in 1.2 are independently noted by Doetjes (1997).

(8) The candidates have *all three* expressed indignation.

Analogous float is attested in French, as Sportiche (1998) himself notes:

(9) Ces hommes avaient *tous les trois* connu Garbo. (Sportiche 1988)
These men have all the three known Garbo.
'These men have all three known Garbo.'

Almost and *presque* 'almost' can occur in the floated constituent, too:

(10) The candidates have *almost all* expressed indignation.
(11) Les garçons sont *presque tous* partis. (Kayne 1975)
The boys are almost all left
'The boys have almost all left.'

In both languages, pronouns may also occur floated:

(12) The candidates have *all three of them* expressed indignation.
(13) Les enfants ont *chacun d'eux* acheté une voiture. (Sportiche 1988)
The children have each of-them bought a car
'The children have each bought a car.'

Some DP idioms – ones with universally quantifying interpretations – can occur in this position in French:

(14) Ses frères habitent *l'un et l'autre* en France.[3] (Kayne 1975)
His brothers live the-one and the-other in France
'His brothers both live in France.'

In English as well, there exists a universally-quantifying DP idiom that occurs in the float position (Nancy Hall, p.c.). When it occurs there, it must, like all English floated quantifiers, quantify over the subject:

(15) a. We should *one and all* contribute something to the relief fund.
b. *Something should *one and all* be contributed to the relief fund by us.
(16) a. The visiting dignitaries may *one and all* be amused by Clyde's elaborate baton-twirling.
b. *Clyde's elaborate baton-twirling may *one and all* amuse the visiting dignitaries.

Similarly, Doetjes (1997) shows that in Dutch a full DP can float in the form of the universal quantifier *allemaal*, which is intransitive and hence necessarily a full DP on its own:

[3] *L'un et l'autre* is not to be confused with the reciprocal *l'un l'autre*.

(17) a. *Allemaal de kinderen zijn gekomen (Doetjes 1997)
All the children are come
'The children all came.'
b. De kinderen zijn *allemaal* gekomen.
The children are all come

Finally, in (a dialect of) English, full DPs containing epithets can float: [4]

(18) a. The candidates have *all three of the dirty bastards* expressed indignation.
b. They may *both of the little brats* want to set fire to the curtains.
c. The staplers may *all four of the useless pieces of crap* be jammed.

These must in fact be floated quantifiers rather than some sort of appositive or other parenthetical constituent, for several reasons.

First, appositives need not be headed by any particular kind of determiner:

(19) The candidates, *Greta, Gertrude, and Clyde,* have expressed indignation.
(20) They, *the worst little brats in the neighborhood,* may want to set fire to the curtains.

But the constituents in (18) are possible only with a limited range of determiners:

(21) a. *The candidates have *Greta, Gertrude, and Clyde* expressed indignation.
b. The candidates have *all three of the dirty bastards* expressed indignation.
(22) a. *They may *the worst little brats in the neighborhood* want to set fire to the curtains.
b. They may *both of the little brats* want to set fire to the curtains.

If the constituents in (18) were simply appositives, there would be no explanation for the quite robust contrast in (21-22).

Second, the constituents in (18) occur in positions rather unnatural for appositives:

(23) a. The candidates, *more self-righteous than seemed appropriate,* have expressed indignation.
b. *The candidates have, *more self-righteous than seemed appropriate,* expressed indignation.

Again, the oddness of this position for appositives contrasts with the relative acceptability of (18).

[4] The relevance of such epithet examples emerged in a discussion with Kyle Johnson.

Third, the constituents in (18) are unlike appositives in their scopal behavior. Appositives do not interact with scope-bearing items in the sentence; nothing can scope over them. However, the constituents in (18) scope in exactly the position in which they occur. In particular, negation takes scope over them:

(25) a. The candidates haven't *all three of the dirty bastards* expressed indignation.
b. They won't *both of the little brats* want to set fire to the curtains.

For example, (25a) may be true in a situation in which two of the three candidates have, in fact, expressed indignation. All that is necessary is that not all three of them have. It seems necessary, then, to treat (18) as exemplifying another kind of phrasal quantifier float rather than a kind of appositive.

In addition to phrasal float of the sort considered here, there exists an even more unconstrained form of phrasal float in Spanish. Torrego (1996) demonstrates that even definite and weak DPs can float:

(26) a. Firmamos *los linguistas* la carta.
Signed-1PL the linguists the letter
'The linguists among us signed the letter.'
b. Firmamos *algunos* la carta.
Signed-1PL some the letter
'Some of us signed the letter.'

The first-person agreement on the verb precludes analyzing the italicized constituents as subjects.

So, although phrasal float is not typically discussed[5], there appears to be quite a range of evidence from several languages suggesting that quantifier float can be phrasal, and overtly so. In both English and French, the floated constituent can include adverbs like *almost*, numerals, pronouns, and epithets, or even consist instead of a fully-articulated DP idiom. In Dutch, intransitive Qs can float. And in Spanish, apparently virtually any DP can, no matter its internal structure. Generally, float seems to be a phenomenon that targets full DPs.

I.3. Phrasal Float and the Standard Accounts

The observation that full DPs float raises serious difficulties for both the adverbial and stranding approaches. Neither of them is naturally compatible with the facts presented above.

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[5] Phrasal floated quantifiers involving numerals or pronouns do, however, play a crucial role in a pair of squibs (Baltin 1980, Jackendoff 1981) concerned chiefly with the determiner system of English and the constituent structure of e.g. *all three of the men*, and are discussed in Doetjes (1997). Apparently, though, phrasal floated quantifiers involving epithets and idioms have escaped previous attention.

The adverbial analysis is, without fundamental modification, is utterly incapable of accommodating phrasal float. One might imagine attempting to cope by treating e.g. *all three* or *both of them* as single lexical items – simply morphologically complex adverbs – but this is not ultimately tenable. Such a revision would require stipulating an infinitely large class of such complex adverbs to account for the grammaticality in this position of e.g. *all four, all five, all six*, etc.

Nor could all the additional overt material associated with the floated quantifier in these cases be part of an AdvP:

(27) a. The candidates have *very frequently* expressed indignation.
b. The chiropractors may *quite wisely* love lawn bowling.
(28) a. *The candidates have *very all* expressed indignation.
b. *The chiropractors may *quite both* love lawn bowling.
(29) a. *The candidates have *frequently three* expressed indignation.
b. *The chiropractors may *quite of them* love lawn bowling.

As (27-29) demonstrate, the internal architecture of phrasal floated quantifiers varies dramatically from that of AdvP. It is fairly apparent, then, not only that the floated constituent is indeed phrasal, but also that it is not an adverb or AdvP.

The stranding analysis faces problems nearly as challenging. The fundamental prediction such an analysis makes is that every floated quantifier could have equally well occurred non-floated, as a subconstituent of the subject. Such a structure would be generated simply by failure to strand the quantifier. Thus for every sentence involving phrasal float, there should be a grammatical counterpart in which the phrasal floated quantifier and the subject form a constituent:

(30) a. The candidates have *all three* expressed indignation.
b. **All three* the candidates have expressed indignation.
(31) a. The candidates have *all three of them* expressed indignation.
b. **All three of them* the candidates have expressed indignation.
(32) a. The candidates have *all three of the dirty bastards* expressed indignation.
b. **All three of the dirty bastards* the candidates have expressed indignation.
(33) a. The chiropractors may *both of them* love lawn bowling.
b. **Both of them* the chiropractors may love lawn bowling.

None of these counterparts to phrasal float sentences is possible.[6] Indeed, strings such as

[6] It is crucial in these examples that comma intonation be avoided, since this would yield an appositive reading for the (b) sentences under which they are grammatical:

(i) a. *All three of them*, the candidates, have expressed indignation.
b. *All three of the dirty bastards*, the candidates, have expressed indignation.
c. *Both of them*, the chiropractors, may love lawn bowling.

all three of the dirty bastards the candidates or *both of them the chiropractors* never even surface as constituents in English. Analogous facts hold in Dutch and French, as Doetjes (1997) points out:

(34) *Dutch* (= (17))
a. De kinderen zijn *allemaal* gekomen.
The children are all come
'The children all came.'
b. *Allemaal de kinderen zijn gekomen
All the children are come

(35) *French*
a. Les enfants sont *tous les trois* allés à la plage.
The children are all the three gone to the beach
'The children all three went to the beach.'
b. **Tous les trois* (les) enfants sont allés à la plage.
All the three (the) children are gone to the beach

Assuming that the italicized constituents in (30-35) are themselves complex Qs that have been stranded, and therefore have a trace on their right, does not seem to be a tenable option.

The possibility that a floated quantifier might occur without a trace is on its face incompatible with the essence of the stranding analysis: that something is actually *stranded*. But it is possible in principle to dilute the stranding hypothesis by supposing that a trace can be 'realized' as a pronoun under certain circumstances. These certain circumstances would, of course, be exactly those involved in phrasal cases of quantifier float. Sportiche (1988) suggests this possibility in passing. It is, however, rather at odds with the spirit of the stranding analysis, and it leaves unanswered the basic question of why these traces in particular uniquely have the capacity to surface as pronouns. Superficially, the notion that some pronouns might be a kind of overt trace has a certain appeal – this is, in a sense, exactly what one may understand resumptive pronouns to be. In fact, though, resumptive pronouns differ profoundly from the pronouns involved in

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These sentences are immaterial to the subject-floated quantifier relationship. That these are distinct phenomena, and must be treated as such, is most apparent with pronouns, which cannot normally serve as appositives but occur unproblematically as subjects in such sentences:

(ii) a. They have *all three of them* expressed indignation.
b. They have *all three of the dirty bastards* expressed indignation.
c. They may *both of them* love lawn bowling.

(iii) a. **All three of them*, they, have expressed indignation.
b. **All three of the dirty bastards*, they, have expressed indignation.
c. **Both of them*, they, may love lawn bowling.

If the sentences in (ii) can be generated by stranding the italicized phrasal floated quantifiers, and if appositives and normal post-Q DPs were to be treated identically, the sentences in (iii) would be expected to be grammatical. They are not, irrespective of whether the appositive reading is assigned.

phrasal float. Resumptive pronouns occur only where *wh*-traces are found, and in any case are (even marginally) grammatical in English only in islands. One cannot simply deposit pronouns willy-nilly in positions occupied by A-traces: **The candidates may have been angered them, *The chiropractors are likely them to be lawn bowling.* The pronouns in floated quantifiers, by contrast, are wholly grammatical although they are neither inside an island nor even in sentences in which A'-movement has taken place.

Yet even if these pronouns could plausibly be analyzed as the surface realization of traces, this too would be empirically insufficient in light of much of the phrasal float data discussed. Certainly, the grammaticality of epithets in floated quantifiers, as in (18), would not be expected. In these instances, the Q occurs left of a full DP, so these sentences can involve *neither* a trace nor a pronoun. To weaken the stranding analysis even further by claiming that traces can sometimes be realized as full DPs would deform it so much as to drain it of its interest entirely.[7] And even this gutting would be inadequate to account for float of DP idioms such as *one and all* and *l'un et l'autre* in (14-16).

1.4. Summary

Despite typical assumptions, floated quantifiers cannot in general be analyzed as 'partial' constituents. They can surface with a full range of DP structure and with no plausible trace position. This is incompatible with fundamental assumptions made in standard treatments of quantifier float, which require either adverbial structure or a trace position.

2. Where to Put Floated QPs

The observation that quantifier float involves full QPs puts questions about the external syntax of float in a new light. A modified explanation must be given both of floated QPs' phrase structural position and of their relationship to overt arguments. In this section, reconceptualizations of the analysis of float are considered with an eye toward phrase structure; the next section addresses the connection to an A-position in more depth.

2.1. The Adjunction Analysis

There exists an alternative to both the adverbial and stranding analyses of floated quantifiers that lies somewhere in the conceptual space between them: floated quantifiers may be adverbial, but not actually adverbs, and nominal, but not necessarily eviscerated DPs.

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[7] Certain Minimalist assumptions afford another approach to modifying the stranding hypothesis along these lines that seems more promising. Assuming the copy theory of movement, the notion that traces may sometimes be phonetically realized as particular lexical items is somewhat more plausible – it would simply be the result of a determination at PF that several, rather than only one, of the occurrences of a moved constituent will be pronounced. How to achieve non-identity among these occurrences is a rather vexing question, though. This sort of approach is discussed further in sections II.2-3.

Taking at face value the observation that complete, fully overt QPs float, one might assign them a structure such as (36):[8]

(36) The candidates have [$_{VP}$ [$_{QP}$ all three of the dirty bastards] [$_{VP}$ expressed indignation]].

This supposes that floated quantifiers that surface in complete phrases, with no sign of an internal gap from which a DP might have been extracted, are in fact fully structured, complete QPs. There being no movement from inside these phrases to an A position, there is no pressing reason to assume that these phrases are themselves in an A position – and indeed, with no empty underlying subject positions available, there is no A position they could plausibly occupy. Since their distribution in fact parallels that of certain adverbs, it is desirable to suppose instead that they are, like these adverbs, left-adjoined to some verbal projection.[9] This is the structure reflected in (36).

This sort of structure can be adapted straightforwardly to the more canonical cases of quantifier float:

(37) The candidates have [$_{VP}$ [$_{QP}$ all] [$_{VP}$ expressed indignation]].

As above, the floated quantifier here is analyzed as simply a left-adjoined QP – in this case, it so happens that this QP has only one overt constituent, its head. However, more overt material can be accommodated in this structure, as is necessary:

(38) a. The candidates have [$_{VP}$ [$_{QP}$ all three] [$_{VP}$ expressed indignation]].
b. The candidates have [$_{VP}$ [$_{QP}$ all three of them] [$_{VP}$ expressed indignation]].

Thus this approach captures the phrasal float facts while simultaneously capturing both the correlation in internal structure between floated quantifiers and nominals and the correlation in external distribution between floated quantifiers and adverbs. Neither of the standard accounts sketched above permits both of these generalizations to be captured simultaneously, and neither captures the phrasal facts at all.

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[8] Doetjes (1997) also arrives at an adjoined-QP structure for floated quantifiers, for some of the same reasons, though she further assumes that floated QPs contain (possibly null) pronominals.

[9] The choice of VP as the site of adjunction, rather than some other verbal functional projection, is not of paramount importance here. This is intended only as an indication of the position occupied by a particular class of adverbs – e.g. English *merely* and *just*, French *toujours* 'always' and *presque* 'almost' – in the general spirit of the Pollock (1989) proposal that in French both these adverbs and quantifiers are VP-initial, a structure also adopted by Doetjes (1992). Perhaps it might in fact be more advantageous to suppose that the adjunction site may be T' or TP. It should be at least that high to ensure that quantifiers and these adverbs may in principle precede modals in English (*The cocker spaniels {all / merely} should be shaved bare*). It cannot be as high as AgrS', though, to ensure that they do not occur in French immediately left of the leftmost verb (**Les enfants {tous / presque} vont partir* 'The children {all / almost} are going to leave'). Committing to a particular verbal projection may in itself be misguided, of course – it is possible that floated quantifiers adjoin to different projections depending on whether their associate is a subject, object, or indirect object (cf. Cinque (1999)).

That the QPs in (37-38) occur in apparently "reduced" forms is consistent with their behavior more generally:

(39) a. Although some states once permitted hunting buffalo, [QP all] now forbid it.
b. "Men marched asleep. . . . [QP All] went lame; [QP all] blind . . ." (attested in Owen 1964)
c. Few of the futons were cheap, but [QP all] were attractive.

(40) a. Although some states once permitted hunting buffalo, [QP all fifty] now forbid \ it.
b. Few of the futons were cheap, but [QP all twenty] were attractive.

The other prototypical English floating quantifiers behave similarly:

(41) a. Although Arkansas and Oklahoma still permit hunting buffalo, [QP both] discourage it.
b. There were two futons that were affordable, and [QP both] looked virtually homemade.

(42) a. Although some states once permitted hunting buffalo, [QP each] now forbids it.
b. We looked at several futons, and [QP each] was uglier than the last.

Both and *all* cannot normally occur with a numeral, as *all* can, but of course this is equally true in both floated and non-floated contexts. All three Qs, however, may constitute full QPs alone.

All of the structures posited in (37-38) for floated QPs, then, are in fact independently attested for their non-floated counterparts. This observation leads to a generalization:

(43) *The Subset Generalization*
Floated quantifiers – phrasal or otherwise – are (proper) subset of the QPs that may occur in A positions.

Essentially, this expresses the idea that there are no special structures available to floated, but not non-floated, QPs. Without further adornment or modification, the proposal under discussion would make this prediction. It is not obvious that this generalization is actually true – and indeed one might imagine modifications to the analysis that would disentangle it from this prediction. But as it is, it seems that this makes an interesting empirical claim that appears to be true, but could be counterexemplified by evidence for the grammaticality (in some language) of structures such as those in (44):

(44) a. *The candidates have *all of* expressed indignation.
b. *The candidates have *all the* expressed indignation.
c. *The candidates have *all three ugly* expressed indignation.
d. *The candidates have *very all* expressed indignation.

Outside of English, French data in Kayne (1975), Jaeggli (1982), Sportiche (1988), and Doetjes (1992) seem to support the Subset Generalization as well. It seems consistent with float (or float-like phenomena) in Maori (Bauer 1993), Dutch (Doetjes 1992), and Japanese (Miyagawa 1989) as well. In general, I have been unable to find any counterexamples to this generalization. So analyzing floated quantifiers as adjoined QPs creates an interesting and falsifiable expectation that does not arise from the perspective of either of the standard analyses. That this expectation actually appears to be true lends this analytical possibility additional appeal.

Moreover, the Subset Generalization can do explanatory work in deriving the inventory of floating quantifiers. To the extent that this enterprise – undertaken in section IV – is successful, this is further support for the idea.

Because it treats floated quantifiers as a kind of DP, this analysis is compatible with the possibility of agreeing floated quantifiers (Shlonsky 1991, Merchant 1996). These are problematic only for an account that assumes floated quantifiers are actually adverbs, of category Adv, since this category is said to be cross-linguistically incapable of agreement. Such facts are entirely tractable so long as floated quantifiers are nominal, as they are under this approach. For this to be entirely clear, of course, more must be said about how agreement is to be accomplished (see section III.4). Irrespective of the particular mechanism employed, though, agreeing floated quantifiers do not pose a problem in principle for this analysis, as they do for adverbial approaches.

At this stage, moreover, none of this requires any new assumptions. It is necessary on quite independent grounds to assume that DPs generally, QP or otherwise, may adjoin in this position:[10]

(45) a. Eager to impress, Floyd and Clyde have *all week* been saying that they've been speaking nothing but Swahili.
b. The prosecutor may *this morning* again reveal something salacious, tragic, and ultimately highly entertaining.
c. The candidates have *every day this week* expressed their indignation.
d. Several determined members of congress *today* condemned in the strongest possible terms the actions of everyone they deem immoral.
e. Each afternoon's display of sanctimony may *the next morning* be forgotten by everyone who heard it.

Since adjunction of DPs in these preverbal positions must be assumed in any case, supposing that floated quantifiers are adjoined QPs entails no additional or special assumptions about possible phrase structures. Rather, floated quantifiers are, in this structural respect, simply a special case of a left-adjoined DP modifier.

[10] Of course one might imagine analyzing adverbial DPs as PPs (arguments against this approach are in Morzycki 1997). Clearly, though, the constituents in question are XPs of some sort; for the most part, they cannot plausibly be analyzed as AdvPs.

2.2. *An Alternative Possibility*

While the adjoined QP analysis seems appealing (and will be assumed here), it is certainly not the only analytical possibility. It is worth contrasting it with another, more radical way of accommodating the phrasal float facts.

The adjunction analysis began by simply finding room in tree in the most natural way for the sort of structure the phrasal float data demands. But one might proceed differently instead, by beginning with the observation that quantifier float can be understood loosely as an instance of an argument being multiply expressed. In a sentence such as (46), for example, the external theta role of *expressed indignation* appears to have been assigned twice, once to *the candidates* and again to *all three of the dirty bastards*:

(46) *The candidates* have *all three of the dirty bastards* expressed indignation.

Although *the candidates* and *all three of the dirty bastards* do not have identical denotations, they certainly stand in a close semantic relationship.

Perhaps, then, one might preserve an aspect of the Sportiche (1988) analysis by assuming that the relationship between the floated quantifier and its associate can be understood as a chain. Of course, the fact that there is no trace position in (46) would seem to preclude this possibility. A modification of the copy theory of movement (Chomsky 1995, Sauerland 1998) may make this more plausible, though. Assuming traces are copies, (47a) would have a representation roughly like (47b):

(47) a. The candidates have expressed indignation.
b. [The candidates] have [the candidates] expressed indignation.

The copies of *the candidates* in the various trace positions are not phonetically realized because they are identical to the head of the chain. But if somehow non-identical material could enter into this chain, perhaps it could then be pronounced. Suppose, for example, that instead of *the candidates, all three of the dirty bastards* may be in the internal subject position:

(48) [The candidates] have [all three of the dirty bastards] expressed indignation.

This, of course, is the string in (46). One might imagine, then, that the phrasal float facts are not evidence against placing floated quantifiers in internal subject positions, but rather against assuming identity among the links in a chain.

Naturally, this is a radical move, and must consequently be regarded with great caution. It is possible, however, to develop an understanding of the notion "chain" more consistent with this view. For example, one might imagine defining a chain in terms of theta roles:

(49) A chain is a sequence of positions $\alpha_1, \ldots, \alpha_n$, such that:
- for every $1 \leq x < n$, the conditions for movement from α_{x+1} to α_x are satisfied
- every link in the chain shares the theta role of α_n

Such a chain might come about if the computational system has the option of doing either of two kinds of movement. In the familiar kind, a term phonetically identical to another is introduced into the tree in order to satisfy some requirement. In the novel kind, a term thematically identical to another is introduced into the tree in order to satisfy some requirement.

The interpretation such a chain receives might be represented by treating a theta role as a function that applies independently to every link, conjunctively. Thus (48) would have a denotation roughly like (50):

(50) $\exists$e [express-indignation(e) $\wedge$ Agent(the-candidates, e) $\wedge$ Agent(all-three-of-the-dirty-bastards, e)]

Though of course simplified, this seems a reasonable sketch of the meaning of (48).

2.3. Comparisons and Conclusions

It seems preferable at this point to adopt the adjunction account rather than the theoretically bolder chain account sketched in II.2. Certainly, the chain account has some virtues. In proposing a fundamental reconceptualization, it is theoretically interesting. It connects the explanation of the phrase structural position of floated quantifiers and the explanation of the relation between them and their A-position associate. And it casts this relation in terms of a familiar (if profoundly reconfigured) notion, the chain. Like the adjunction account, it captures the Subset Generalization. But the chain account is less empirically responsible – its consequences are in some respects unclear and it raises many unanswered questions.

Among the most radical aspects of the chain account is that it amounts to a dramatic reformulation of the Theta Criterion. Since it requires viewing chains as defined in terms of theta roles, it is no longer independently meaningful to require that every chain be assigned exactly one. Any sequence of positions sharing a theta role would now be a chain by definition, and any sequence of positions with more than one role would now fail to be a chain by definition. This does not seem to be a desirable result.

One way this difficulty would manifest itself is that non-phonetically identical chain links could all be realized in ungrammatical ways:

(51) *[The candidates] may [the lobbyists] have [the pundits] expressed indignation.

Given this formulation of the chain analysis, this should be a grammatical way of

asserting that the candidates, the lobbyists, and the pundits may have expressed indignation. Of course, on the adjunction analysis as well, some restriction is required on what a well-formed floated QP is. But it seems reasonable that a particular kind of adjunction be restricted to a particular kind of constituent. It is a bit more odd, though, that the possibility of non-phonetic identity among links in a chain be restricted to a particular kind of constituent. Even if such a restriction could be devised, it would face difficult issues involving the order of links in the chain. It is unclear how a restriction that permits (52a) could rule out (52b) in any principled way:

(52) a. [The candidates] may [all three of the dirty bastards] have expressed indignation.
b. *[All three of the dirty bastards] may [the candidates] have expressed indignation.

If the bracketed constituents are simply links in a chain, and the restriction is stated in terms of possible links, (52a) and (52b) could not be distinguished. To remedy this an additional stipulation would be required that allows greater freedom for the head of a chain than for all the other links.

Moreover, this sort of account inherits some of the difficulties of stranding accounts. It predicts, for example, that floated quantifiers could occur anywhere a trace can. Yet this is not the case:

(53) a. *The chiropractors died all.
b. *The candidates were elected all.

In English, the theta position in both unaccusatives, as in (53a), and passives, as in (53b), is unable to host floated quantifiers. One might wonder, too, how such an account could capture non-subject float, as in French, which stranding accounts must simply set aside because it permits floated quantifiers to c-command their A-position associate.

Of course, none of the difficulties the chain account presents seem insurmountable in principle. It may be possible (even desirable) to further articulate this sort of account in a way that addresses these issues.

The adjunction account, though, confronts none of these difficulties. It requires absolutely no new theoretical assumptions with respect to phrase structure, so it is simpler and does not get ensnarled in theta-theoretic complications. Nor does it predict non-existent float of the sort in (53), or run afoul of French non-subject float.

It also resolves a certain tension between the analytical goals of the stranding and adverbial accounts. The central goal of stranding accounts is to capture the resemblance between floated and non-floated quantifiers. In contrast, the central goal of adverbial accounts is to capture the distributional resemblance between floated quantifiers and adverbs. The QP-adjunction account does both, as incorporating it into the table in (7) illustrates:

(54)

	Resemblance between floated and non-floated Qs	*Resemblance between floated Qs and adverbs*
Adverbial accounts	• Must make additional stipulations	• Captured
Stranding accounts	• Captured	• The two are treated as utterly unrelated
The QP-adjunction account	• Captured	• Captured

Thus on the QP-adjunction account, floated quantifiers resemble non-floated quantifiers in that both are QPs, and floated quantifiers resemble adverbs in that both are left-adjoined to VP.

So the adjunction account seems preferable. Without requiring any new theoretical assumptions, it captures the phrasal float data, predicts the Subset Generalization, resolves the descriptive tension between the two classes of standard analyses, and accounts for the phrase structural position of floated quantifiers.

3. The Floated QP and its A-Position Associate

Any account of quantifier float must permit some understanding of the relationship between a floated quantifier and the argument position DP with which it is associated. This question is particularly pressing if, as proposed here, floated QPs are adjoined. After all, adjuncts are not normally assumed to enter into this kind of relation with arguments.

It should be noted, though, that the issue of how this relationship is established is independent of the assumption that quantifier float involves QP adjunction. This structure itself is in principle compatible with a number of different theories of this relationship.

Since this relationship is largely semantic, a natural approach toward this problem is to begin by asking how QPs in adjoined positions are interpreted.

3.1. A Problem of Interpretation

Assuming adjunction of QPs to VP presents a certain semantic challenge: how can such a structure be interpreted in a way that accords naturally with the semantics of QPs and VPs more generally? Some additional assumptions need to be made to answer this question. An answer does not follow directly from standard assumptions about the types of denotations QPs and VPs normally receive. Merely combining a normal QP denotation – say, a generalized quantifier – with a normal VP denotation would not on its own yield the right result.

Certainly, one might imagine various ways of achieving the appropriate interpretation by assuming that the floated QP has a denotation of a type that QPs in argument positions do not normally have.[11] While perfectly sensible, this is less desirable than a solution which would allow the floated QP to receive exactly the same interpretation it would in an argument position. The challenge, then, is to identify a way of interpreting adjoined QPs that requires a minimum of special assumptions about the QP semantics.

3.2. An Apparently Unrelated Syntactic Problem

Since no natural way of directly composing the denotations of floated QPs and VPs follows automatically from standard assumptions, this alone does not suffice to provide a theory of the relationship with the A-position associate. A more deliberate theoretical move seems necessary.

This of course requires a closer examination of what exactly this relationship is. Standard accounts of quantifier float typically assume that it basically amounts to c-command. On the stranding view, the trace inside the floated quantifier is c-commanded by the surface subject. On the adverbial view, a special denotation for floated quantifiers (Dowty and Brodie 1984) ensures that they will quantify only over c-commanding constituents. In English, it is in fact the case that a floated quantifier's associate must c-command it. Interestingly, though, this does not appear to be the right generalization more generally.

French illustrates this quite clearly. French floated quantifiers may be associated with arguments other than subjects. While the argument in these cases – displaced by clitic movement – may c-command the floated quantifier, it need not:

(58) a. Je *les* ai *tous* vus. (Doetjes 1992)
I them have all seen
'I have seen all of them.'

b. Elle *les* a *tous les trois* mis à la porte. (Kayne 1975)
She them has all the three put to the door
'She threw all three of them out.'

(59) a. Je veux *tous les* voir. (Doetjes 1992)
I want all them see
'I want to see all of them.'

b. Elle a *tous* voulu *les* lire. (Jaeggli 1982)
She has all wanted them read.
'She wanted to read them all.'

C-command does not seem to be the right notion here.

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[11] One might, for example, suppose that the floated QP has a denotation of type $\langle\langle e,t\rangle,\langle e,t\rangle\rangle$.

The same point can be made in another way with respect to subjects. Certain embedding predicates in French permit elements in the higher clause to be construed as though they were located in the lower one:

(60) a. Il ne faut pas que tu parles. (Cinque, in press)
It necessary not that you speak
'It is necessary that you do not speak.'
b. ?Il ne faut rien que tu fasses.
It necessary nothing that you do
'It is necessary that you do nothing.'
c. Il ne faut plus que tu parles.
It necessary anymore that you speak
'It is necessary that you don't speak any longer.'

The interpretations here are much like those associated with English Neg-raising. Strikingly, though, something of this sort is possible as well with floated quantifiers:

(61) Je veux *tous* qu'*ils* viennent. (Doetjes 1992)
I want all that-they come
'I want them all to come.'

(62) a. Il faut *toutes* qu'*elles* s'en aillent. (Kayne 1975)
It necessary all that-they CL-CL go-away
'It is necessary that they all go away.'
b. Il faut *tous* qu'*on* se tire.
It necessary all that-one CL beat
'It is necessary that we all beat it.'

In all these cases, the floated quantifier c-commands the subject it is associated with, and not vice versa. It seems clear, then, that no generalization can be drawn about a rigid c-command relation holding between floated quantifiers and their associates.

Indeed, (61-62) show that this relationship need not even be clause bound. Of course, given the evidence of permeability in these clauses in (60) – along with the observation that these are roughly the sorts of contexts that allow clitic climbing (Doetjes 1997) – this is may be a set of regular exceptions to an otherwise robust clause-boundedness requirement. But it does suggest that whatever the relationship is, it is more complex than one might initially suspect.

There are various means by which one might attempt working around the absence of any fixed c-command requirement. One of these is to simply deny that subject-related float is the same phenomenon as object-related float, as Sportiche (1988) does. But this fails to avoid the difficulty posed by (61-62). Merely making the distinction between these two kinds of float does not permit a clean statement of a c-command generalization.

Moreover, on this view it would be a puzzle why exactly the same constituents float, irrespective of whether they are subject-related or not. As Jaeggli (1982) points out, "any analysis of [quantifier float] must express the generalization that only those elements which can 'float' off subject NPs can be found displaced from, and modifying, a clitic" object. And, in general, a unified treatment of the phenomenon is preferable on purely theoretical grounds; any distinctions that can be avoided should be.

Another course one may take to try to avoid the awkward analytical position French presents is to take it as a problem local to French. Perhaps French and English quantifier float are fundamentally different phenomena? While this is of course a possibility, it too is to be dispreferred on theoretical grounds unless there is substantial evidence that such a distinction is warranted. In fact, there are important similarities between quantifier float in French and in other languages. As in English, float targets universally-quantifying constituents (more on this in section V). As in English, it results in movement to a position at the left periphery of a verbal projection. This appears to be the same position in both languages (as head movement possibilities in the languages show). As in Hebrew (Shlonsky 1991) or German (Merchant 1996), the floated quantifier may agree with its associate. So taking these problems to be local to French does not seem desirable.

One is left, then, with a puzzle: Although English has only subject-related float, universal grammar must permit float in principle to be associated with any argument. It must in addition not enforce a c-command requirement in either direction between the floated constituent and its associate. In light of this, how exactly can this relationship be characterized?

3.3. Doetjes' Generalization

One way to avoid answering a difficult question is to ask another one that's easier. This is the approach taken by Doetjes (1992, 1997) to the troubling question above. Instead of asking what the structural relationship must be between a floated quantifier and its associate, she asks what the structural relationship must be between a floated quantifier and *the trace of* its associate.

This is a question much easier to answer. It is always the case, Doetjes points out, that a floated quantifier c-commands the trace of its associate. Repeating (58-59), more richly annotated, makes this clear:

(63) a. Je *les*$_1$ ai [*tous* [vus t_1]]. (Doetjes 1992)
I them have all seen
'I have seen all of them.'

b. Elle *les*$_1$ a [*tous les trois* [mis t_1 à la porte]]. (Kayne 1975)
She them has all the three put to the door
'She threw all three of them out.'

(64) a. Je veux [*tous* [*les*$_1$ voir t_1]]. (Doetjes 1992)
I want all them see
'I want to see all of them.'
b. Elle a [*tous* [voulu *les*$_1$ lire t_1]]. (Jaeggli 1982)
She has all wanted them read.
'She wanted to read them all.'

This holds even for long-distance float cases like (61), again repeated here:

(65) Je veux [*tous* [qu'*ils*$_1$ t_1 viennent]]. (Doetjes 1992)
I want all that-they come
'I want them all to come.'

This way of looking at the situation, then, may be the key to the puzzle presented by the apparent absence of a c-command requirement between floated quantifiers and their associates. In fact, there is no such requirement; there is, however, a requirement that associate have left a trace the floated quantifier can c-command.

Of course, stating a generalization directly in terms of c-command is a bit odd theoretically. On its own, c-command is merely a formal relation between two nodes, much like "sister of" or "linearly adjacent to". However useful it is descriptively and in defining other structural relations, it is not itself a theoretically contentful notion. Binding, on the other hand, is. It is in these terms that Doetjes frames her generalization:

(66) *Doetjes' Generalization*
A floated quantifier must bind the trace of its A-position associate.

Stating this in terms of binding makes a kind of intuitive sense. The relationship between the floated quantifier and its associate has the feeling of anaphora. Understanding the c-command requirement through binding satisfies this intuition. This understanding is not without difficulties, however, as will become clear momentarily.

Among the most attractive features of Doetjes' Generalization is that it provides an explanation not only of the c-command problem, but potentially also of the absence in English of float associated with non-subjects. Since a floated quantifier must c-command a trace of its associate, it may occur only when the associate has left a trace somewhere. If it hasn't moved and therefore has left no trace, the floated quantifier should be impossible. In French, this is so.

(67) a. Elle a voulu *tous les*$_1$ lire t_1. (Jaeggli 1982)
She has wanted all them read
'She wanted to read them all.'
b. *Elle a voulu *tous* lire *ces livres.*
She has wanted all read these books
'She wanted to read all these books.'

If the object fails to undergo clitic movement, as in (67b), it cannot be associated with a floated quantifier. In English, of course, clitic movement is not available. Thus float associated with objects will not be possible. In this way, the typological difference in whether non-subject float is permitted is reduced to the presence of clitic movement in a language.

This typological result, it should be noted, relies crucially on the assumption that objects that do not clitic-move out of VP remain there throughout the derivation. It is unclear how to reconcile this with the idea that objects move to a higher specifier position like the specifier of AgrO at some stage in the derivation. Presumably, Doetjes' Generalization should hold at LF. This is where a constraint framed in terms of binding seems most natural. But this is exactly the level by which objects are assumed to have moved. One way around this difficulty is to assume that the sort of trace Doetjes' Generalization requires must be one left by overt movement. This may not be altogether bizarre, in that covert movement is taken to have properties in various respects different from overt movement in any case. If, for example, covert movement involves movement of formal features only (Chomsky 1995), perhaps Doetjes' Generalization could be made sensitive to this distinction. None of this would help, of course, if objects are assumed to move overtly.

A different tack entirely would be to suppose that what is crucial was not whether the trace was left by overt movement but rather how close it is to the floated quantifier. Perhaps the binding relation between the floated quantifier and trace may observe different locality conditions in different languages. In English, unlike in French, this locality requirement would be so stringent that the floated quantifier can bind only the nearest trace, that of the subject. Alternatively, of course, it is possible in principle to avoid these difficulties by changing various theoretical assumptions – say by stating this constraint instead at Spell-Out/S-structure. Whatever compatibility problems it encounters with more recent syntactic theory, though, the idea of connecting non-subject quantifier float to the availability of clitic movement seems elegant and deep.

3.5. The Interpretation Problem Resolved

There is another, less theory-bound difficulty with Doetjes' Generalization, however. As much as binding seems intuitively to be the right notion to express the relationship between floated quantifiers and A-traces, it is not obvious how to understand it formally. Nor is it obvious how to capture this binding requirement without simply stipulating it.

Certainly, the binding requirement introduces no formal difficulty with the syntax. There is no theoretical obstacle to assuming that a trace can be syntactically bound simultaneously by both the head of its chain and a floated quantifier. Indeed, instances of syntactic double-binding arise in any case, as in *Every student$_1$ knew he$_1$ would wear himself$_1$ out*, where the reflexive is syntactically bound by both *every student* and *he*. But double binding is only possible in the sense of binding that involves simply c-command and coindexing. Variable binding, however, cannot work quite the same way. To say a variable is bound by two different operators simultaneously is logically incoherent, given the way operator-binding is normally defined. (After all, a variable, once bound by a nearby operator, is no longer free and therefore ineligible for binding by a more distant one.) The configuration Doetjes proposes could not be viewed as double variable binding, then, with the trace variable-bound by both the floated quantifier and the head of its chain. Yet it could hardly be viewed as anything else. She demonstrates that floated quantifiers are the sorts of expressions that normally bind variables. The heads of chains, too, bind their traces as variables. So the double-binding required here must, in fact, be variable binding.

This being largely a technical problem, one might imagine a technical solution: to assume that traces may be interpreted not as a single variable, bound twice, but rather as two variables, each bound once. In order to implement this, a corresponding double-indexing of these traces would likely be required in the syntax. A trace associated with both a displaced argument and with a floated quantifier could thus have a distinct index bound by each of them, and be interpreted as two distinct variables rather than a single one. Of course, to fully evaluate this suggestion it would be necessary to venture further into the semantics of quantifier float – an intricate and interesting topic that would require more consideration than can be given it in this paper. For current purposes, though, it should suffice to note that it is possible in principle to encode Doetjes' Generalization in a way that avoids the logical incoherence of supposing that a variable must be bound by two different operators at once.[12]

It is now possible to make sense of the notion that a trace is doubly variable-bound:

(69) [The candidates]$_1$ will [each of the bastards]$_2$ $t_{1,2}$ express indignation.

The subject trace will now be interpreted doubly, both as a variable bound by *each of the bastards* and as a separate variable bound by *the candidates.* This is in a sense a kind of split-antecedent trace, not entirely unlike the split-antecedent PRO in *Floyd$_1$ notified Clyde$_2$ that it would be a mistake PRO$_{1+2}$ to excuse themselves$_{1+2}$ early.*[13]

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12 This discussion is framed in terms of traces in the traditional sense. Presumably, though, it could also be made compatible with the copy theory of movement or with reconstruction into base positions.

13 Such a doubly-indexed trace is of course not identical to split-antecedent PRO, though, in that it, unlike split-antecedent PRO, is not simply a plural pronoun.

Double-indexing of the sort in (69) may be necessary independently, given that in French a floated quantifier may c-command a clitic. If they bore the same index, the clitic would be locally bound, violating Condition B of the binding theory. If they bear distinct indexes, though, the clitic would not be bound at all and the sentences' grammaticality would be expected.

Treating the floated quantifier-trace relationship as variable binding has the additional advantage of opening up a means of understanding floated quantifier agreement. In Polish, for example, QPs (irrespective of position) and the pronouns they bind agree in gender:

(70) a. *Każdy*$_1$ student myslał; że *on*$_1$ to rozumie.
Every.MASC student thought.MASC that he this understands
'Every student thought the he understood this.'
b. *Każda*$_1$ myslała, że *ona*$_1$ to rozumie.
Every.FEM thought.FEM that she this understands
'Each thought the she understood this.'

However this sort of agreement is accomplished, there is no reason to assume that if it can target this instance of variable binding, it can't also target the variable binding between a floated quantifier and a trace. Floated quantifier agreement, then, is unsurprising. It is simply a case of QP agreement of the exact same sort as attested in argument positions.

This understanding of Doetjes' Generalization, then, resolves a difficulty with double variable-binding of traces and solves the syntactic problem raised in II.2 – the relationship between the floated quantifier and its associate can be understood despite the absence of a c-command requirement directly between these two constituents.

3.5. The Interpretation Problem Resolved

Perhaps surprisingly, this solution to the syntactic problem sheds light on the solution to the interpretation problem as well. Given the option of multiply indexing traces, QPs adjoined to VP can be interpreted compositionally in an entirely regular fashion without necessitating any significant additions to standard assumptions about what QPs denote.

Without double-indexing, interpreting a VP-adjoined QP would likely require assigning either the VP or the QP a special denotation. Certainly, a standard generalized-quantifier denotation for the QP would not be adequate here. But now that the adjoined QP will bind a trace internal to the VP, it can combine with it just as though it had QRed from it. Just as a QRed QP is interpreted as a generalized quantifier applying to the property that results from abstraction over the trace it binds, a VP-adjoined QP can be interpreted this way, too. Exactly as with QR, abstracting over the trace the adjoined QP binds yields a property denotation to which the QP denotation can apply. So attempting to encode the Doetjes' fundamentally syntactic generalization leads to a conclusion about

how to meet the interpretive challenge raised above.

Notably, though, none of this explains why sentences like **The dogs may all three of the cats have been overfed* should be ill-formed. This is likely a problem that a more fully developed semantics could correct. One approach would be to introduce further requirements into the interpretation of traces, such as that when a trace is interpreted as a multiple variables, particular relations hold between them. Perhaps a preferable approach, tough, is to assume that this constraint is among more general semantic constraints on float, of the sort that constrain the inventory of potential floating quantifiers. This is, in any case, not an argument position, and therefore not one in which one would expect new arguments to be introduced.

An answer may now emerge to the question of why floated quantifiers must bind a trace in the first place. Rather than simply stipulating that this is so, it is possible to suppose that a floated quantifier that fails to bind a trace would simply be uninterpretable, since it would not have a denotation of the right type to combine with a VP. It is binding that allows it receive the QR-like interpretation assigned to it here. The requirement that floated quantifiers bind a trace may thus follow purely from their interpretation.

4. Case and Binding

There remain two general features of the adjoined QP approach that may still need fleshing out. One is how these QPs get Case; the other is how they interact with Binding Theory.

4.1. Case

Unlike the standard alternatives, the adjoined QP analysis must provide some account of how these QPs satisfy Case theory. The stranding model does not face this issue directly, since on that view it is sufficient for the embedded DP complement of Q to move into a Case-marked position. (This leaves somewhat vague the account of how exactly the by-then eviscerated QP that dominates its trace gets Case.) Adverbial accounts confront no Case issue at all.

But although this issue presents itself more directly for the adjunction account, it is not unique to it. The issue would arise in any case. As pointed out earlier in (45), repeated here, DPs occur in adjoined positions quite apart from quantifier float:

(73) a. Eager to impress, Floyd and Clyde have *all week* been saying that they've been speaking nothing but Swahili.
b. The prosecutor may *this morning* again reveal something salacious, tragic, and ultimately highly entertaining.
c. The candidates have *every day this week* expressed their indignation.

d. Several determined members of congress *today* condemned in the strongest possible terms the actions of everyone they deem immoral.
e. Each afternoon's display of sanctimony may *the next morning* be forgotten by everyone who heard it.

Because it is empirically desirable for other reasons as well to assume adjunction of DPs in various contexts, the question of how adjoined DPs satisfy the Case requirement is in fact fairly general.

This cuts off one line of explanation: any account that relies on the relationship between the floated QP and its associate would necessarily fail to account for Case assignment in other instances of DP adjunction.

The simplest way to answer this question, and probably ultimately the most desirable, is to suppose that adjoined DPs do not need to check Case in the first place. This could be encoded into the grammar by simply assuming that the Chain Condition, formulated so that it applies only to A-chains as in Chomsky (1986), for example, is the sole Case requirement.[14] In more recent terms, one might assume that non-argument DPs need not have a Case feature to check, or perhaps even that it is the theta roles themselves that must be checked. DPs in A' positions would thus be relieved of any Case obligations. This immediately accounts not only for floated QPs, but also for the otherwise vexing menagerie of other non-argument positions in which DPs may be found – in DP small clauses, as in (74a); as predicate nominals in copular constructions, such as (74b); as secondary predicates, as in (74c); and as adverbial adjuncts, as in (74d):

(74) a. We consider Floyd *everyone's favorite chiropractor*.
b. He is *an experienced chiropractor*.
c. He entered the profession *the most dedicated chiropractor anyone knew*.
d. He meets other chiropractors *every day*.

In all of these constructions, the DP in question has no obvious means of meeting the Case requirement. Nor is there any clear theoretical benefit to supposing that it must. It is in fact exactly these sorts of observations that lead Safir (1987) and Stroik (1996) to conclude that nonargument DPs are systematically exempt from Case theory. So the understanding of Case necessary to account for floated QPs is exactly that necessary to account for the various constructions in (74).

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14 A suitable formulation of Chain Condition for these purposes is that of Chomsky (1986):

(i) *The Chain Condition*
A maximal A-chain ($\alpha_1, \ldots, \alpha_n$) has exactly one Case-marked position (namely, α_1) and one θ-marked position (namely, α_n).

This accords with the idea, attributed to Joseph Aoun, that Case is what makes argument DPs *visible* – that is, eligible – for theta-marking. The particular means of encoding the Case requirement is not crucial here, however. What is crucial is that Case be understood as a requirement that holds only of argument DPs.

4.2. Binding

Another major issue raised by analyzing floated quantifiers as adjoined QPs is how these constituents interact with binding theory.

Immediately striking in this respect is that floated QPs do not seem to observe Conditions B and C. Condition B would rule out floated QPs with pronouns, such as (75a); Condition C would rule out floated QPs with epithets, such as (75b):

(75) a. The candidates$_i$ have all three of them$_i$ expressed indignation.
b. Les enfants$_i$ ont chacun d'eux$_i$ acheté une voiture. (Sportiche 1988)
The children have each of-them bought a car
'The children have each bought a car.'

(76) The candidates$_i$ have all three of the dirty bastards$_i$ expressed indignation.

In (75), a pronoun embedded inside the floated constituent is bound by the subject, yet is grammatical. So too for the epithet in (76). This, it should be noted, is a fairly theory-independent, empirical observation; it is not a consequence of analyzing floated quantifiers as adjoined QPs. Any account of (75-76) must explain these facts.

One might suppose that the failure of Conditions B and C to rule out certain floated QPs is a consequence of their being anaphors (and hence subject only to Condition A). The possibility that floated quantifiers are anaphors has in fact been explored (Belletti 1982, Jaeggli 1982), but it does not on its own really explain (75-76). That a floated quantifier – or on this view, a QP – is anaphoric does not necessarily predict that constituents embedded in it would be exempt from their normal binding requirements. There is, however a deeper difficulty with this view: floated QPs need not be c-commanded by their associate, as illustrated in section III.2, so certainly they need not be bound. Indeed, in some cases, the floated quantifier and its associate aren't even clausemates, as in (61-62). There is even evidence that the floated quantifier and its associate ought not to be coindexed. *Tous* 'all' may be associated with *on* 'one', as in (62b), repeated here:

(77) Il faut *tous* qu'*on* se tire. (Kayne 1975)
It necessary all that-one CL beat
'It is necessary that we all beat it.'

Coindexing *tous* and *on* seems rather dubious. *On* is grammatically singular, which seems incompatible with *tous*. Thus *tous* here is not only distant from any potential binder, but in fact no potential binder seems to exist in the sentence. Condition A, then, is not being observed by floated QPs, so they cannot be treated as anaphors.

A preferable way to approach this data, then, may be in terms of the argumenthood. Floated QPs (on the QP-adjunction view) are not arguments, so perhaps their odd binding-theoretic behavior stems from that. A natural framework in which to explore this possibility is the binding theory of Reinhart and Reuland (1993), in which the generalization that only argument DPs must satisfy binding conditions is captured very directly.

The Reinhart and Reuland versions of Conditions A and B, in slightly simplified form, are as in (78):

(78) *Reinhart and Reuland (1993)*
Condition A: A reflexive-marked predicate is reflexive.
Condition B: A reflexive predicate is reflexive-marked.

Again simplifying slightly, a predicate is said to be *reflexive* if two of its arguments are coindexed, and *reflexive-marked* if one of its arguments is an anaphor.

Given this, some odd facts relating to quantifier float and Conditions A and B follow quite naturally. That pronouns should occur embedded in floated quantifiers, as in (75), would be expected. The floated QP is not itself a reflexive predicate, so it would not need to be reflexive-marked to satisfy Condition B. There is no reason, then, why an anaphor should be required and a pronoun ruled out. On the other hand, reflexives cannot occur embedded in a floated quantifier:

(79) a. *The candidates have all three of themselves expressed indignation.
b. *The chiropractors may both of themselves love lawn bowling.

This would be ruled out by Condition A. Although the floated QP is not a reflexive predicate, it is illegally reflexive-marked.

Explaining the grammaticality of epithets in floated quantifiers, as in (76), is more tricky. Certainly, the binding conditions in (78) do not rule them out. Nor does Reinhart and Reuland's specialized Chain Condition, which accounts for some Condition C effects, since it is formulated to apply only to arguments. Nor does Grodzinsky and Reinhart (1993)'s Rule I, in (80), which covers other Condition C effects:

(80) *Grodzinsky and Reinhart (1993) Rule I*
NP A cannot corefer with NP B if replacing A with C, C a variable A-bound by B, yields an indistinguishable interpretation.

This would not rule out epithets in floated quantifiers. It is hard to be absolutely sure in this context of what sort of binding one is dealing with, but clearly there is a distinction between sentences with pronouns, as in (75), and ones with epithets, as in (76). By these standards, then, epithets are correctly predicted to be grammatical. This does not seem to be an earth-shatteringly deep outcome, however – it is unclear whether any of these principles would rule out epithets anywhere.

The standard binding theory would probably not have been much more helpful here, though. Because it is cast in terms of structural domains, correctly predicting the pronoun and reflexive facts would be troublesome in itself and predicting the epithet facts harder still.

So treating floated quantifiers as adjoined QPs provides a structure in which these sorts of facts can emerge quite clearly, and in which an explanation can begin to be formulated. It is not a question that arises on the standard views of quantifier float.

5. What Can Float and Where

Irrespective of what particular account is given for the phenomenon, the observation that quantifier float involves full QPs puts in a different light questions about how to explain which constituents float, and what constitutes float in the first place.

5.1. The Inventory of Floating Quantifiers

Given that some but not all QPs seem to float, it is of course desirable to find some principled basis for what the inventory of floating QPs is. This is something that normally seems to be more or less stipulated. Certainly, the particular inventory of floating quantifiers discussed in section I.2 does not follow in any way from standard theories of float.

A first step toward deriving the inventory has already been taken. Unless something special is said, any theory that accounts for the phrasal float facts would likely also capture the Subset Generalization, repeated here:

(81) *The Subset Generalization*
Floated quantifiers – phrasal or otherwise – are (proper) subset of the QPs that may occur in A positions.

This amounts to a requirement that only 'regular' QPs float. It would be counterexemplified by evidence that floated QPs have some special structure available to them that is not available to their non-floated counterparts. As now stated, the adjoined QP account, as well as the multiply-realized chain account, capture this generalization. Standard accounts reject it in a rather deep way – adverbial accounts of course deny that floated quantifiers are QPs at all, and the stranding account requires that only QPs with internal traces float.

As mentioned before, although (81) makes a rather vulnerable empirical claim, it is consistent at least with French and English data, as well as data from other languages

mentioned earlier. But, as French and English illustrate, it can also do explanatory work in deriving the inventory of floating quantifiers when coupled with another principle:

(82) *The Universal Generalization*
Floating QPs have universal quantificational force.

Again, this seems to hold for English and French (although it will be slightly revised momentarily). English existentially-quantifying QPs like *some* do not float; nor do French existentially-quantifying QPs like *plusiers* 'several' and *quelques-uns* 'some(ones)' (Kayne 1975).

Here, potential counterexamples arise a bit more readily, though none of them are entirely clear-cut. The Spanish examples in (26) may be counterexamples, although one might imagine analyzing these as involving *pro* with a DP modifier rather than true float (Kyle Johnson, p.c.). Likewise, Japanese classifier float and perhaps even German splitting constructions may be counterexamples, but at least as likely, they are not true float or the same kind of float. Whatever its cross-linguistic status, the Universal Generalization seems quite clear-cut for English and French.

These two generalizations alone, however, appear to derive (at least the core) inventory of floated QPs. For English, for example, these two generalizations correctly predict that *all, both, each,* and – surprisingly, *every* – can float. For the first three, this claim is uncontroversial. For the last, it is not immediately obvious. Though it is universal, *every* cannot float bare:

(83) *The candidates have *every* expressed indignation.

But the Subset Generalization predicts this, since *every* cannot occur bare even in A-positions:

(84) **Every* has expressed indignation.

Yet *every last one of them* can occur in A-positions:

(85) *Every last one of them* has expressed indignation.

Consequently, the Subset Generalization does not bar it from floating. And indeed, it can:

(86) The candidates have *every last one of them* expressed indignation.

Similarly, the Universal Generalization predicts that the universally-quantifying idioms mentioned before – *one and all* in English and *l'un et l'autre* 'both, the one and the other' – can float, since they are legitimate full QPs and therefore also satisfy the Subset Generalization. And indeed, they float:

(87) We should *one and all* contribute something to the relief fund.

(88) Ses frères habitent *l'un et l'autre* en France. (Kayne 1975)
His brothers live the-one and the-other in France
'His brothers both live in France.'

So the Subset Generalization, supplemented only with Universal Generalization, appears to correctly predict the inventory of English and French floating Qs.

This approach does not seem hopelessly strictly restricted to French and English. In Maori, for example, *katoa* 'all' clearly satisfies the Universal Generalization, and satisfies the Subset Generalization as well because it 'can be used as a substantive' (Bauer 1993, p. 503). Consequently, it may be 'floated to post-verbal position, even across intervening constituents' (p. 112):

(89) a. Kaaore anoo ia kia moohio ki [ngaa (Bauer 1993, p. 112)
NEG yet 3SG SUBJ know to the.PL
tamariki katoa].
children all
'She does not yet know all the children.'
b. I tika katoa [ana paatai]. (Bauer 1993, p. 503)
T/A right all PL-GEN-3SG question
'He got every answer right'

On the other hand, the determiner *ia* 'each' occurs only 'in a pre-nominal position'. It is thus inconsistent with the Subset Generalization. Consequently, it 'cannot be floated' (p. 113). Indeed, *katoa* is apparently the only constituent that floats in the language.

Neither of the standard analyses makes these predictions. Indeed, on neither account are *every* or idioms ever expected to license float. So viewing float as phrasal yields this unexpected benefit.

5.2. *A Few Unanswered Questions*

This does leave open a few intriguing questions. One is where negative quantifiers fit in. One could classify them as either universal ($\forall x \neg \phi$) or existential ($\neg \exists x \phi$). What consequences does this have for the Universal Generalization? Perhaps, if French negative expressions such as *personne* 'no one' or *rien* 'nothing' could plausibly be analyzed as floated QPs, it might be the case that negative quantifiers are treated as universal in French, but existential in English, which does not appear to permit them to float.

Another area of uncertainty is how the floated quantifier comes to receive a partitive interpretation, as it does in both French and English. This generalization also seems to have a role in constraining the inventory of floated QPs:

(90) a. The candidates have *every last one of them* expressed indignation.
b. ??The candidates have *every last one* expressed indignation.
(91) a. The candidates have *all three of the bastards* expressed indignation.
b. ??The candidates have *all three bastards* expressed indignation.

These contrasts suggest that the partitive effect cannot simply be the result of some principle that causes bare structures like [$_{QP}$ *all*] to be interpreted as partitive – the effect is apparently felt in all floated QPs.

One might wonder where the Universal Generalization comes from. The Subset Generalization is by comparison unmysterious. It is a kind of default consequence of the phrasal analysis. But the universal generalization must at this point be stipulated. Surely, there must be a deeper source for it. Perhaps it is related to some resistance, mentioned in III.5, to using a non-argument position to introduce or revoke participants in an event.

5.3. Float in Funny Places

The exploration of why the Universal Generalization seems to hold may be aided by looking at an apparent exception. Constituents that may be analyzed as floated quantifiers may occur at the left edge of various adjuncts, as in (92), due to Bobaljik (1995):

(92) Larry, Darryl, and Darryl came into the cafe [all at the same time].

The constituency must be as indicated, since *all* cannot normally float on the right:

(93) *Larry, Darryl, and Darryl came into the cafe all.

Moreover, the bracketed constituent in (92) can be fronted:

(94) a. [All at the same time], Larry, Darryl, and Darryl came into the cafe.
b. *At the same time, Larry Darryl, and Darryl came into the cafe all.

Doetjes (1997) suggests that it is inappropriate to treat these as floated quantifiers, because this position accommodates all sorts of DPs, quantificational or otherwise:

(95) a. Mary, Sue, and Peter came into the cafe [Mary and Sue at the same time] and [Peter a little bit later].
b. Hundreds of tourists entered the museum, [several at the same time].

In light of this, Doetjes proposes instead to analyze these as small clauses.

One might take a different approach, however. Perhaps these are floated quantifiers (in some sense) after all, but occurring in a position in which the Universal Generalization is not required to hold? If this position were sustainable, it might help in understanding where this generalization comes from by connecting it to a particular

environment. This sort of approach has the additional advantage of not raising a puzzling issues about licensing overt subjects here – if these are small clauses, how do their subjects check Case?

Treating these instead as adjoined-QPs avoids the Case issue in the same way it was avoided for floated QPs in matrix clauses. Moreover, one can imagine how the requirements of a floated QP might be met here. Assuming these secondary predicates contain a PRO subject, one might suppose the floated QPs can either bind this PRO directly – it is after all interpreted as a variable anyway – or else bind a trace left by movement of PRO, just as A-movement traces are bound by floated QPs in matrix clauses. In either case, the QP could be interpreted normally.

This unifies two apparently unrelated and puzzling phenomena. And it would allow the question of what the origin of the Universal Generalization is to be put in a different, and perhaps more fruitful way: Why does this generalization hold *where* it does?

6. Conclusion

The core empirical observation considered here is that floated quantifiers seem to have complete, fully articulated QP structure, and occasionally display it overtly. They may occur with numerals, pronouns, intransitive Qs, adverbs, and even quantificational idioms and epithets.

When taken seriously, though, this simple observation leads one down analytical paths that might otherwise be left unexplored. It ultimately requires a reconceptualization of float generally. The particular reconceptualization advanced here is that floated QPs should be construed as VP-adjuncts that bind A-traces and consequently may receive standard generalized quantifier interpretations. This view accounts for the phrasal data as well as the full range of c-command configurations permitted in float, and reconciles the essential insights of the standard analyses by treating floated QPs as having an adverbial position and a nominal structure. An alternative view is also suggested, though left incompletely explored, in which floated QPs involve multiple realizations of a chain.

This observation also leads to a theory of the inventory of floating quantifiers that is exactly the opposite of what is predicted by standard accounts, yet seems empirically justified: that *only* full QPs may float. Supplemented with the still-mysterious Universal Generalization, this assumption – a natural consequence of the full-QP analysis – derives the inventory of floating quantifiers in at least English, French, and Maori.

Aside form the particular analysis proposed to account for it, the observation that float is phrasal also raises novel questions, both empirical and theoretical. Among these: How general are the principles used here to derive the inventory of English and French floated quantifiers? How should principles like the Universal Generalization be encoded

in the grammar? Besides idioms and QPs headed by *every*, for example, what else might float that one might not have expected? How might all this relate to other float-like constructions?

Both empirical and theoretical benefits, then, seem to flow from taking the observation that full QPs may float as an indication that all quantifier float involves full QPs.

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